

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Attorney Docket No.: ISPH-0763

Inventors: Monia et al.

Serial No.: Not Yet Assigned

Filing Date: Herewith

Examiner: Not Yet Assigned

Group Art Unit: Not Yet Assigned

Title: Antisense Oligonucleotide Inhibition of
RAS

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By Jane Massey Licata
Typed Name: Jane Massey Licata, Reg. No. 32,257

Commissioner for Patents
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Sir:

INFORMATION DISCLOSURE STATEMENT

Pursuant to 37 C.F.R. §1.56 and in accordance with 37 C.F.R. §§1.97-1.98, information relating to the above-identified application is hereby disclosed. Inclusion of information in this statement is not to be construed as an admission that this information is material as that term is defined in 37 C.F.R. §1.56(b).

(XX) In accordance with §1.97(b), since this Information Disclosure Statement is being filed either within three months of the filing date of the above-identified application, within three months of the date of entry into the national stage of the above identified application as set forth in §1.491, or before the mailing date of a first Office Action on the merits of the above-identified application, no additional fee is required.

() In accordance with §1.97(c), this Information Disclosure Statement is being filed after the period set forth in §1.97(b) above but before the mailing date of either a Final Action under §1.113 or a Notice of Allowance under §1.311, therefore:

() Certification in Accordance with §1.97(e) is set forth below; or

() The fee of \$180.00 as set forth in §1.17(p) is attached.

() In accordance with §1.97(d), this Information Disclosure Statement is being filed after the mailing date of either a Final Action under §1.113 or a Notice of Allowance under §1.311 but before the payment of the Issue Fee, therefore included are: Certification in Accordance with §1.97(e); Petition Requesting Consideration of the Information Disclosure Statement; and the fee of \$130.00 as set forth in §1.17(I)(1).

() Copies of each of the references listed on the attached Form PTO-1449 (modified) are enclosed herewith.

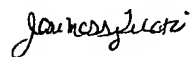
(XX) In accordance with §1.98(d), copies of some or all of the references listed on the attached Form PTO-1449 (modified) are not enclosed herewith because they were previously submitted to the U.S. Patent and Trademark Office in prior application Serial No. 09/870,002, filed May 30, 2001, 09/575,554, filed May 22, 2000, Serial No. 09/128,494, filed August 3, 1998, Serial No. 08/889,296, filed July 8, 1997, Serial No. 08/411,734, filed April 3, 1995, Serial No. 08/007,996, filed January 21, 1993, or Serial No. 07/958,134, filed October 5, 1992 for which a claim for priority under 35 U.S.C. §120 has been made in the instant application.

Please charge any deficiency or credit any overpayment to Deposit Account No. 50-1619. This form is submitted in duplicate.

() The relevance of the listed references in a foreign language is as stated in the specification at pages @@.

(XX) All listed references are in the English language.

Respectfully submitted,



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Form PTO-1449 Modified		Docket No. ISPH-0763	Serial No. Not yet assigned
List of Patents and Publications Cited by Applicant (Use several sheets if necessary)		Applicant Monia et al.	
U.S. Department of Commerce		Filing Date herewith	Group Not yet assigned
OTHER DOCUMENTS (Including Author, Title, Date, Pertinent Pages, Etc.)			
	AA	Anfossi et al., "An Oligomer Complementary to c-myb-encoded mRNA inhibits proliferation of human myeloid leukemia cell lines", <i>Proc. Natl. Acad. Sci.</i> 1989, 86, 3379-3383	
	AB	Borer, P.N., Dengler, B., Tinoco, I., Jr., and Uhlenbeck, O.C., "Stability of Ribonucleic acid Double-stranded Helices", <i>J. Mol. Biol.</i> , 1974, 86, 843-853	
	AC	Brown et al., "Modulation of ras Expression by Anti-sense, Nonionic Deoxyoligonucleotide Analogs", <i>Oncogene Research</i> 1989, 4, 243-252	
	AD	Capon et al., "Complete nucleotide sequence of the T24 human bladder carcinoma oncogene and its normal homologue", <i>Nature</i> 302 1983, 33-37	
	AE	Chang et al., "Comparative inhibition of ras p21 protein synthesis with phosphorus-modified antisense oligonucleotides", <i>Anti-Cancer Drug Design</i> 1989, 4, 221-232	
	AF	Chang et al., "Antisense inhibition of ras p21 expression that is sensitive to a point mutation", <i>Biochemistry</i> 1991, 30, 8283-8286	
	AG	Chiang et al., "Antisense Oligonucleotides Inhibit Intercellular Adhesion Molecule 1 Expression by Two Distinct Mechanisms", <i>J. Biol. Chem.</i> 1991, 266:18162-18171	
	AH	De Mesmaeker et al., "Antisense Oligonucleotides", <i>Acc. Chem. Res.</i> 1995, 28:366-374	
	AI	Dignam et al., "Accurate transcription initiation by RNA polymerase II in a soluble extract from Isolated mammalian nuclei", <i>Nucleic Acids Res.</i> 1983, 11, 1475-1489	
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OTHER DOCUMENTS (Including Author, Title, Date, Pertinent Pages, Etc.)			
	AJ	Feramisco et al., "Transient reversion of ras oncogene-induced cell transformation by antibodies specific for amino acid 12 of ras protein", <i>Nature</i> 1985, 314, 639-642	
	AK	Gebeyehu, G., et al., "Novel biotinylated nucleotide - analogs for labeling and colorimetric detection of DNA", <i>Nucl. Acids Res.</i> 1987, 15:4513-4534	
	AL	Georges, R.N. et al., "Prevention of Orthotopic Human Lung Cancer Growth by Intratracheal Instillation of a Retroviral Antisense K-ras Construct", 1993, <i>Cancer Research</i> , 53, 1743-1746.	
	AM	Greenberg, M.E., in <i>Current Protocols in Molecular Biology</i> , (F.M. Ausubel, R. Brent, R.E. Kingston, D.D. Moore, J.A. Smith, J.G. Seidman and K. Strahl, eds.), John Wiley and Sons, NY	
	AN	Hall et al., "Identification of transforming gene in two human sarcoma cell lines as a new member of the ras gene family located on chromosome 1", <i>Nature</i> 1983, 303: 396-400	
	AO	Hall and Brown, "Human N-ras: cDNA cloning and gene structure", <i>Nucleic Acids Res.</i> 1985, 13, 5255-5268	
	AP	Holt et al., "An Oligomer Complementary to c-myc mRNA Inhibits Proliferation of HL-60 Promyelocytic Cells and Induces Differentiation", <i>Mol. Cell Biol.</i> 1988, 8, 963-973	
	AQ	Kabanov et al., "A new class of antivirals: antisense oligonucleotides combined with a hydrophobic substituent effectively inhibit influenza virus reproduction and synthesis of virus-specific proteins in MDCK cells", <i>FEBS Lett.</i> 1990, 259, 327-330	
	AR	Kahn et al., "The c-K-ras gene and human cancer (review)", <i>Anticancer Res.</i> 1987, 7, 639-652	
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	AS	Kawasaki et al., "Uniformly Modified 2'-Deoxy-2'-fluoro Phosphorothioate Oligonucleotides as Nuclease-Resistant Antisense Compounds with High Affinity and Specificity for RNA Targets", <i>J. Med. Chem.</i> 1993, 36, 831-841	
	AT	Kingston, R.E., in <i>Current Protocols in Molecular Biology</i> , (F.M. Ausubel, R. Brent, R.E. Kingston, D.D. Moore, J.A. Smith, J.G. Seidman and K. Strahl, eds.), John Wiley and Sons, NY.	
	AU	Kornberg, A., <i>DNA Replication</i> , W.H. Freeman & Co., San Francisco, 1980, pp 75-77	
	AV	Lima et al., "Implication of RNA Structure on Antisense Oligonucleotide Hybridization Kinetics", <i>Biochemistry</i> 1992, 31, 12055-12061	
	AW	Letsinger et al., "Cholesteryl-conjugated oligonucleotides: Synthesis, properties, and activity as inhibitors of replication of human immunodeficiency virus in cell culture", <i>Proc. Natl. Acad. Sci. USA</i> 1989, 86, 6553-6556	
	AX	Mukhopadhyay, T. et al., "Specific Inhibition of K-ras Expression and Tumorigenicity of Lung Cancer Cells by Antisense RNA", (1991) <i>Cancer Research</i> 51, 1744-1748	
	AY	Martin, P., "Ein neuer Zugang zu 2'-O-Alkylribonucleosiden und Eigenschaften deren Oligonucleotide", <i>Helv. Chim. Acta</i> 1995, 78, 486-504	
	AZ	Manoharan et al., "Cholic Acid-Oligonucleotide Conjugates for Antisense Applications", <i>Bioorg. Med. Chem. Let.</i> 1994, 4, 1053-1060	
	BA	Manoharan et al., "Introduction of a Lipophilic Thioether Tether in the Minor Groove of Nucleic Acids for Antisense Applications", <i>Bioorg. Med. Chem. Let.</i> 1993, 3, 2765-2770	
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	BB	Manoharan et al., "Antisense Strategies", <i>Ann. N.Y. Acad. Sci.</i> 1992, 660, 306-309	
	BC	Manoharan et al., "Lipidic Nucleic Acids", <i>Tetrahedron Lett.</i> 1995, 36, 3651-3654	
	BD	Manoharan et al., "Oligonucleotides Conjugates: Alteration of the Pharmacokinetic Properties of Antisense Agents", <i>Nucleosides & Nucleotides</i> 1995, 14, 969-973	
	BE	McGrath, J.P. et al., "Structure and organization of the human Ki-ras proto-oncogene and a related processed pseudogene", <i>Nature</i> 1983, 304, 501-506	
	BF	Nielsen et al., "Sequence-Selective Recognition of DNA by Strand Displacement with a Thymine-Substituted Polyamide", <i>Science</i> 1991, 254, 1497	
	BG	Oberhauser et al., "Effective incorporation of 2'-O-methyl-oligoribonucleotides into liposomes and enhanced cell association through modification with thiocholesterol", <i>Nucl. Acids Res.</i> 1992, 20, 533-538	
	BH	Owen et al., "Transcriptional activation of a conserved sequence element by ras requires a nuclear factor distinct from c-fos or c-jun", <i>Proc. Natl. Acad. Sci. U.S.A.</i> 1990, 87, 3866-3870	
	BI	Petersheim, M. and Turner, D.H., "Base Stacking and Base-Pairing Contributions to Helix Stability: Thermodynamics of Double-Helix Formation with CCGG, CCGGp, CCGGAp, ACCGGp, CCGGUp, and ACCGGUp", <i>Biochemistry</i> 1983, 22, 256-263	
	BJ	Puglisi and Tinoco, "Absorbance Melting Curves of RNAs", <i>Methods in Enzymol.</i> 1989, 180, 304-325	
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	BK	Reddy, P.E. et al., "A point mutation is responsible for the acquisition of transforming properties by the T24 human bladder carcinoma oncogene", <i>Nature</i> 1982, 300, 149-152	
	BL	Sanghvi et al., "Antisense oligodeoxynucleotides: synthesis, biophysical and biological evaluation of oligodeoxynucleotides containing modified pyrimidines", <i>Nucl. Acids Res.</i> 1993, 21, 3197-3203	
	BM	Sanghvi, Y.S., in Crooke, S.T. and Lebleu, B., eds., <i>Antisense Research and Applications</i> , CRC Press, Boca Raton, 1993, pp. 276-288	
	BN	Saison-Behmouaras, T. et al., "Short modified antisense oligonucleotides directed against Ha-ras point mutation induce selective cleavage of the mRNA and inhibit T24 cells proliferation", <i>EMBO J.</i> 1991, 10, 1111-1118	
	BO	Skorski, et al., "Growth Factor-dependent Inhibition of Normal Hematopoiesis by N-ras Antisense Oligodeoxynucleotides", <i>J. Exp. Med.</i> , 1992, 175, 743-750	
	BP	Svinarchuk et al., "Inhibition of HIV proliferation in MT-4 cells by antisense oligonucleotide conjugated to lipophilic groups", <i>Biochimie</i> 1993, 75, 49-54	
	BQ	Shea, "Synthesis, hybridization properties and antiviral activity of lipid-oligodeoxynucleotide conjugates", et al. <i>Nucl. Acids Res.</i> 1990, 18, 3777-3783	
	BR	Tidd et al., "Evaluation of N-ras oncogene anti-sense, sense and nonsense sequence methylphosphonate oligonucleotide analogues", <i>Anti-Cancer Drug Design</i> 1988, 3, 117-127	
	BS	Tabin, C.J. et al., "Mechanism of activation of a human oncogene", <i>Nature</i> 1982, 300, 143-149	
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	BT	Taparowsky, E. et al., "Activation of the T24 bladder carcinoma transforming gene is linked to a single amino acid change", <i>Nature</i> 1982, 300, 762-765	
	BU	Taparowsky et al., "Structure and Activation of the Human N-ras Gene", <i>Cell</i> 1983 34: 581-6	
	BV	Wickstrom et al., "Human promyelocytic leukemia HL-60 cell proliferation and c-myc protein expression are inhibited by an antisense pentadecadeoxynucleotide targeted against c-myc mRNA", <i>Proc. Nat. Acad. Sci.</i> 1988, 85, 1028-1032	
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U. S. PATENT DOCUMENTS							
Examiner		Document	Date	Name	Class	Subclass	
	AA	4,871,838	10/3/89	Bos et al.	536	27	
	AB	5,034,506	7/23/91	Summerton et al.	528	391	
	AC	5,138,045	8/11/92	Cook et al.	536	27	
	AD	5,218,105	6/8/93	Cook et al.	536	25.31	
	AE	5,378,825	1/3/95	Cook et al.	536	25.34	
	AF	5,459,255	10/17/95	Cook et al.	536	27.13	
FOREIGN PATENT DOCUMENTS							
Examiner Initial		Document No.	Date	Country	Translation YES NO		
	AG	WO 92/15680	9/17/92	PCT	X		
	AH	PCT/US88/01024	3/22/88	PCT	X		
	AI	WO 94/26764	11/24/94	PCT	X		
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